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INDUSTRIAL EDUCATION AND A STATE POLICY

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A STATE POLICY OF PROMOTING INDUSTRIAL EDUCATION

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Significance of industrial education

Apart from the direct question of establishing industrial and trades schools, the term "industrial education" in the minds of the mass of our people simply means the redirecting of our public schools through recognizing that they must be adapted to the needs of our people and that their subject-matter must be taught with an economic, as well as a social purpose in mind.

Industrial education in common with all effective education should (1) develop out of experience; (2) this experience should have relation to vocations or to the pupils' part in life; and (3) every school should be the natural expression of the life of its community.

Industrial education used in its broadest sense is in no way antagonistic to the general function of all education, which is to develop and train the mind; but the mind may be trained by means of many subjects, and some subjects or processes are best for one group of persons and other processes for other groups.

Contending points of view

At the present time all are aroused over "industrial education" and some are disturbed. Apparently there are lacking clear definitions of the respective fields of "handwork in public schools," "industrial schools," "vocational schools" and "trades schools"; there is a confusion as to its content; whether it includes agricultural, industrial and commercial training; there is a fear of making a beginning, forgetting that the best in our education has developed out of pedagogical experience and not out of mere discussion. Questions are raised as to the relative attitudes of manufacturers, labor leaders and business men; a question whether industrial education should be in the hands of our present state boards of education or regents, or in the hands of special boards or commissions; whether it is to be incorporated in special schools or

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in present existing schools; whether trades schools are to be supported by funds received from regular sources or from special sources; whether they are to make things of marketable value and, if so, whether they shall be sold; whether the schools shall cooperate with employers through some sort of a "half time" arrangement, etc. Difficulties apparently present themselves in one hundred ways and much honest difference of opinion exists.

Variance of opinion a necessary part of the development

The reason for this honest variance of opinion is easily explained. Education is beginning to have a real meaning: it is beginning to teach subject-matter in terms of actual daily life and is taking hold of every factor that means much to the people. This is the first serious attempt that we have made in the history of education to meet, in any complete sense, pressing economic, industrial and social problems. We have learned that tremendous industrial forces have been developing with no adequate cooperation of the schools.

When we attempt to study the significance of industry upon the life of our people we find that the social and economic problems involved are exceedingly puzzling. As soon as we begin to connect our schools with our industries and the vocations of our people we are confused by the demands made upon the schools. However, we are committed to a democracy of education, of which industrial education is but one phase.

There is no single solution

In considering a state policy for promoting industrial education it is necessary to keep constantly in mind one basic principle: if industrial education means a redirecting and adapting of our education to fit the economic and social needs of our people, then it is a problem which has no single solution. There will be as many school classifications as there are groups of industries, nearly as many solutions as there are types of communities, and that there is no single inflexible course of study nor a single line of procedure.

Moreover, we must remember that industrial education must be considered in the light of education in an industrial democracy — that we are endeavoring to construct an educational philosophy for those who work in our great constructive industries. Some three years ago I had about an hour's talk with John Mitchell. At that time he emphasized the human aspect of industrial educa-

tion. After he was through talking I felt that the industrial needs of the future would require more than the exercise of hand skill. They would require a new understanding of obligation to work, to individuals and to the state. As a result of this conversation I offer the following: "A thoughtful leader of working men has said that boys and girls need a training which will enable them to earn readily and honestly good wages and to spend wisely." From that day to this I have wanted to substitute for "industrial education" the broader term, "education for industrial workers."

The New York State Education Department is committed to the policy of giving as much attention to the proper education of those who are to work in our constructive industries as is now being given to those who enter professional and managerial careers. Commissioner Draper feels that simple and balanced justice makes it necessary to give to the wage earning masses and to the common industries such equivalent as we can for what the present schools are doing for the wealthier classes and for the professional and managing vocations.

My subject is a rather broad one. So far, in its treatment, I have endeavored to present a background. Now I must present a perspective; for a state policy must keep in mind not only the means to an end, but also the end itself. With this in mind I offer the following propositions:

Redirection of the elementary schools

I That the elementary school is bound to be modified by some of the new external influences which will come from industrial education and that no real and lasting progress will be made in the latter until the elementary schools are redirected in the interests of the people. These schools need education in terms of their environment to save themselves — of course, I refer to agricultural or industrial education in its broadest and rightful sense — the training of a man or woman by means of agricultural or industrial subjects. It is not necessary to have an entirely new curriculum in order to redirect these schools. A portion of agricultural or industrial practice can be expressed in mathematical form; the study of history so that it takes the form of industrial and economic development of a nation; geography can be taught in terms of environment; science in its relation to the great industrial processes upon which the lives of our people depend. I can conceive of an elementary school in which no so called agricultural courses exist,

yet which will still present the subject vitally from day to day by means of the customary studies and exercises. I would not isolate industry or agriculture in the elementary school from this environment of life in order to teach it. I would teach the entire environment. This will give the best training regardless of any future environment. Real and lasting progress in industrial education will be made only when all schools — industrial or otherwise — concern themselves with the needs of human life, and in so far as industrial education tends to vitalize by its example the whole school system, so will its effectiveness be beyond dispute, and no state policy will be complete unless it keeps this end in mind.

Relation of industrial to other schools

2 I wish to suggest the probable relation of schools pertaining to industrial education to the general public school system, as well as to say a word regarding the extent of the restratification which will be incident to their admission. We must audit our present courses of study; take account of our educational stock; label its cost, and selling price; find out what it is worth; the various demands for its different groups and the probable profit of each group to the state and its people. The result of the accounting will be that our school term will be lengthened; the courses will be simplified; they will be given a more industrial and efficient trend through simple forms of handwork which can be done in the regular school rooms from the very beginning of the primary course. We will so advance the children that they will have at all times work which appeals to their needs and aptitudes and they ought to complete the present work of the first six grades at an earlier age than now and thus leave time for a more extended and more efficient school period than is now possible.

The question of the relation of elementary and secondary fields of education will be influenced by the industrial education movement. The school system will begin to separate at the end of the sixth or seventh grade into three very distinct branches. The *larger* part of the work of the present two upper grades will be uniform, but some differentiation finally looking to very complete separation, will begin at that time. Three distinct courses of study, or classes of schools, will follow the elementary school period: (a) the present high school system looking to entrance into college; (b) business schools looking to work in offices, stores etc.; (c) industrial and agricultural schools looking to the training of

workers in these vocations. This plan involves that pupils in the “(a)” division will commence some study of a modern foreign language if they are destined for the literary and classical high school; that in the “(b)” division, some special commercial studies will be introduced for pupils destined for advanced business schools; and that in the “(c)” division, special training with tools and in the household and domestic arts will be offered for those who are to stop with the vocational school or who are to go on to the trades schools or agricultural high schools. This restratification will make it possible for pupils, teachers and parents to begin to think of the work that pupils are ultimately going to do, and by the time they are through the eighth or ninth year they will find abundant opportunity and have some enthusiasm for a school which may exactly qualify them for that work, no matter whether it is professional or whether it is in business activities or in purely industrial lines.

Industrial education and compulsory attendance

3 The raising of the compulsory school age to 16 years should be a part of a state policy for industrial education. All schemes of industrial education base their claims upon the years wasted between 14 and 16. There is little use in proposing a form of education necessarily expensive and complicated unless we strike at the root of the evil. I refer to the employment of immature children in our industries on lines of work which are not conducive to mental growth. Industrial enterprises which require intelligent individual effort on the part of young workers do not want the boy until he is 16 years of age. Unskilled industries now take him when he is very immature and assign him to work which lacks educational content. Every boy and girl up to the age of at least 16 should be engaged in productive work profitable to the body, mind and soul, or else in a school which we hope may be even more profitable. School laws and industrial schools must work together; child labor laws should be so modified that they will closely articulate with industrial school plans.

“Learn and earn” education

4 Probably the most far-reaching phase of the new movement will be the establishment of continuation schools. Thus far we are totally unprepared for this type of industrial education. Before we can do much in this direction laws will have to be enacted re-

quiring employers to regulate their affairs so that their employees may attend these continuation schools at least four or five hours a week and receive instruction in industrial or academic subjects. It is very easy to make such a statement as the preceding one, but it is going to be difficult to carry out this plan. We are acquainted with the general scheme of German continuation schools. But Germany is not America, and manufacturers in this country are apt to feel that too many laws are already in the statute books along lines that restrict the rights of trade. At the same time, the problem of providing an education that will allow "earning and learning" will never be solved until there is some cooperation between a state educational policy and factory laws. Continuation schools will be divided into four general phases:

a Evening schools for those who wish to supplement their daily experience with such academic and shop studies as will allow them to advance another round on the economic ladder, taking such courses as shop mathematics, mechanical drawing, and shop practice. This phase of continuation school work needs no elaboration.

b Day continuation schools for those in our *unskilled* industries where they can receive instruction in civics, language and simple arithmetical processes. These courses will be for those children who are foreign born or who have had inferior school training, but need nevertheless such cultural subjects as I have suggested in order that the state may preserve its American citizenship.

c Day continuation schools for those in our *semiskilled* industries requiring a higher order of intelligence or offering opportunities for the exercises of a higher order if the young people fit themselves for it. Such schools will offer shop mathematics, drawing, simple courses in science. The present apprenticeship schools point to the industrial need and present a solution. Possibly these apprenticeship schools will form a part of the state policy. The state might well recognize the work that is being done in the apprenticeship systems in our large industrial establishments. There are well known advantages in the plan, *but* the state should have the same supervision of the training received in these industries that it now has through rules and regulations concerning hours of labor, infectious diseases, ventilation, dangerous machinery and child labor, *if* the private apprenticeship system is to be taken as a partial substitution for public industrial training. There is much of value in the "half time" shop-school idea but before it can have public indorsement through the spending of public money the state

must be assured that the plan is so worked out that it results in public industrial training and that the "half time" idea does not become a "half way" scheme. So far in America it has been taken for granted that education was free, universal and democratic. If the public does not interest itself in public industrial training it will be left in the hands of private agencies, where it is in danger of selfish exploitation. I believe a state policy should be extremely cautious in indorsing any continuation school system that provides for half a day of "bookwork" in a school where it is under the supervision of public school authorities and at the same time allows a half day of shopwork in a private concern where the practical training is *not* under similar supervision.

d I have spoken of education for industrial workers and have hinted that it would not be confined entirely to the teaching of industrial subjects, neither will it be limited to mathematics, civics and language. It must include a still broader conception of educational values. It will take into consideration the profitable spending of the worker's hours of leisure. The deadening influence of work on the automatic machine can not be entirely eliminated by such studies as I have suggested. The preservation of our industrial democracy requires wholesome recreation for these people. Public recreative centers and public evening lectures will meet this need. Even industrial establishments have found that apprenticeship systems and industrial education do not adequately meet the problem. Hence, they have introduced various industrial betterment features. We must keep in mind the last part of the purpose of education as stated by John Mitchell, "and spend wisely." He meant both time and money.

With the preceding perspective in mind we may consider the state policy through which these ends may be accomplished.

Industrial education — a state policy

I have used the term "state policy" intentionally, first, because the whole question of industrial education is one for a state government to consider; it ranks with the problems of state canals, highways, forest reservations and water powers. Conservation of children is as important as the conservation of the state's other natural resources. The growing proportion of labor cost to total production cost makes it imperative that we study means of increasing the efficiency of the labor that enters into our marketable product.

Second, because the success of maintaining industrial education depends upon state funds; cities and towns will have to be en-

couraged by liberal state support. Generally speaking no trades schools or agricultural schools have been successful without government aid. Experiences of other lands have become well known among our people. The equipment of these schools is expensive, the salaries of their teachers are higher and other expenses of maintenance greater. Moreover, in many instances it is well nigh impossible to educate local boards to the point where they are ready to expend local funds by a direct tax for the entire support of a system of schools which are so obviously a great factor in the advance of the industries of the whole state.

Third, it should be a state policy because it is necessary to economize effort and properly adjust the work which various communities may contemplate. For example, the state of Massachusetts has three state textile schools with courses framed on similar lines. Possibly they are duplicating effort. They should have been planned in reference to the educational and industrial interests of the state and not as a "vote trading" proposition. Agricultural schools in some states are springing up with no central educational body responsible for them. One town desires a school. It may be needed, but before it can obtain the money from the Legislature, the members of some other district insist that their district should have a school as well.

Not primarily a national government policy

Moreover, industrial education is primarily a state policy and not a United States government policy. Congress may well undertake new work in states for the purpose of showing the way and stimulating local ambition when the work is of great magnitude, e.g. agricultural and mechanic arts colleges. Leaders are trained in such institutions and after graduation their labors are not confined to the field of the state in which they were educated. In the case of industrial education of elementary and secondary type, it is quite another matter. The demand for this education should, and usually does, originate in the local communities, and it belongs to them to carry it out, for the people participating in this sort of education are not trained as leaders and do not immediately leave their school environment. It is quite another matter for these communities to go beyond the commonwealth and appeal to Congress. National aid is not usually given without an accompanying provision of some government control. The Constitution intended that the states should control the educational policy within their borders.

Administration of these schools

It is clear that the state should aid local schools, but whether these localities take up industrial education or not is often a question of community ability. A child ought not to be disadvantaged by the locality in which he lives. Ratio of population to taxable property differs so widely that the state must see to it that the educational chances are evened up. However, the state should not pay all the expenses of industrial education. Local enterprise and responsibility should be developed. Industrial, trade and agricultural schools must be close to the people. Educational democracy can not be realized if our people are required to attend schools at a great distance, where there is the expense of board and rooms, individual loss to pupils of home influences and loss to parents of sundry help which children often contribute outside of school hours. Moreover, the class of children which will enter these schools can not afford to go away to school and it is not best that they should.

State and local control

The control of industrial and agricultural education should be in the hands of existing state boards of education. If these boards are not capable of administering such education they should be strengthened by either the addition of an advisory board or by a reorganization of the present board. I believe it is a serious mistake to commit the organization and administration of industrial schools to a special commission and not to the public school authorities of the state and the subdivisions thereof. For any progress, a special commission is obliged to rely on local advocates and on local school committees; and it is needless to create an expensive commission for the purpose of accomplishing that which we have every reason for assuming can be accomplished without additional state machinery.

Local management

Moreover, it is inconsistent with our accepted theories of state and local government, to prohibit to the various communities of the state the same reasonable control over industrial schools which they tax themselves to support, as they exercise over their other educational departments. Industrial education should be kept as much as possible in the hands of local control and management, for otherwise there will be an implied reflection that local boards are

not capable of managing educational affairs. Oftentimes, under special encouragement by the state and with the cooperation of local boards it will be possible to adapt existing buildings to industrial school purposes and thus avoid duplication of plants such as would exist if two state or local boards existed.

Shall industrial schools be separate?

The next important question to consider is whether industrial schools should be separated from schools devoted to "general training." There is a tendency to divorce the two, and in this way the establishment of separate schools of agriculture and industry is repeating for the schools of lower grade that which has been the history of the development of the agricultural and mechanic arts colleges. The Land Grant Act of 1862 established the latter colleges. The new education resulting was so unlike the old education in spirit that new colleges were established independently of the old. You remember how, in some instances, the new was made a department of the old institution. It did not thrive, the separate college being free to do as it chose. However, this has changed, and the separate agricultural college no longer holds the leadership (illustration: Universities of Wisconsin and Illinois). These institutions have found that education that makes use of agricultural and industrial subjects is education just as much as that which was given under the terms of mathematics and philosophy. In fact, the newer education has made the state universities. However, it is to be noticed that the agricultural colleges and schools connected with the universities are really schools within a school, each with its own dean, course of study, tradition and ultimate purpose.

Significantly, the recent movement for industrial and agricultural education has started out to repeat educational history. We are attempting to isolate this latest educational movement by organizing separate classes or schools. Personally, I most decidedly advocate special or distinct schools until we get our bearings, courses of study, our data, our textbooks, and some traditions worthy of preservation; but eventually much that there is in these schools must go into the regular schools. These new separate schools are going to be popular; they will be useful and significant; more than most schools, they will teach the essentials. More of these schools will be demanded. It is easy to see the ultimate result. If the common schools do not redirect themselves they are lost. It would be a mistake to forever forbid a union of the old

type with the new. On the other hand, to attempt to incorporate it in a school that has traditions which will dominate is to defeat a plan of "education for industrial workers" which has been defeated already twice in the educational history of the past 50 years — once when the agricultural and mechanic arts colleges were established, and again when the "manual arts" were introduced. Possibly the times were not ripe. I believe they are today. Industrial education must make its own traditions by creating a machinery that will do it.

Methods of procedure — agricultural communities

1 The question of consolidation of rural schools must be considered as well as a more rigid system of grading. There is a difference of opinion regarding consolidation. However, the right sort of elementary education for rural schools can be given in any rural school in which there is a live teacher who is paid a good salary and who will vitalize the so called "bookwork," teaching it in relation to its agricultural environment. Possibly the needs of secondary agricultural education can not be met unless there is consolidation; for the tools, apparatus, trained teachers and buildings necessary to the purpose will make a formidable demand upon local school funds; but this subject need not be discussed here, as much has been written on it before.

2 The architecture of rural school buildings must be decidedly modified. Every country high school should have an addition for a museum, a small shop and a cooking laboratory. Even some of the rural elementary school buildings might be similarly modified. Doubtless you all know of the model school building which is on the campus of Cornell University.

3 The rural school should make a more extended use of nature as a laboratory. The school garden and Arbor day idea can find its full expression in the open country.

4 There must be a close cooperation with the home for work in mechanic arts, agriculture and cooking. It is a mistake to extend to the rural school the same industrial work which is practical and desirable in the city schools. Boys in the open country might well learn how to set window glass, to mix paint and whitewash, to temper and repair farm tools, to sharpen saws, to make chicken coops, brooders, model gates and fences. Viewed in its proper light and in the sense of relationship of education to environment, the rural school gives better opportunity for manual training, household arts and domestic science training than the city school.

5 There must be the closest of cooperation between the schools of the open country and the state agricultural college. The educational content of the scientific laboratory must be revamped and adapted to the people that desire to use it.

6 The body of knowledge concerning scientific agriculture must in some way reach the people, through bulletins, institutes and granges. I commend to your consideration the farmers institute work of the New York State Education Department and the Department of Agriculture.

Methods of procedure — industrial communities

1 That all pupils should have successfully completed at least six years of elementary school work before entering upon industrial training, during which time they should have had some form of handwork for one hour a day. In the first six grades these children should have learned so called "fundamentals" — how to read and write intelligently; how to compute simple problems in arithmetic; they should know something of the geography of the world and something of the history of their country. It is not necessary to discuss whether the handwork in the first six years is to be industrial education; it is an essential part of all education and has its own peculiar value in even an industrial sense.

2 Industrial training should begin (1) after the ordinary school arts, like reading, spelling, writing, drawing, arithmetic and grammar and the rudiments of history, geography and nature study are fairly completed, and (2) as soon as the muscles are strong enough to handle the lighter tools of industry safely and are sufficiently developed for the acquisition of skill in their use. Under ordinary conditions the vocational schools should be open to children who are 13 or 14 years of age.

3 There should be industrial or vocational schools for boys and girls who have completed these grades, and trades schools for pupils who have reached the age of 16 years, the first type giving a better elementary school provision for the vocational needs of those likely to enter industrial pursuits; the second type offering special shop, laboratory and drawing room practice along a chosen trade pursuit.

Intermediate industrial education

This form of vocational training is primarily for pupils 13 to 16 years of age in the fields of trades and manufacturing industries and does not assume to give complete trade training. It must,

from the standpoint of greatest advantage both to the individual and the community, train for practical work and at the same time secure an adequate training of the mind. Its course of study should extend from two to four years. The latter period is preferable for two reasons — first, because this length of time is necessary to produce the requisite mental and physical training for a life of progression and industrial efficiency, and second, because it enables a school to attract and hold the students when their growing power is greatest and their earning power least.

Trades schools

Eventually definite trade training for pupils who have chosen a trade must be carried on in every section of the state where there is a demand for such training. This training should be open to pupils who are 16 years of age. There will be many types of these schools — monotechnic and polytechnic, fitting in with every industry. We must remember that the pupils enter these trades schools with a definite purpose of proficiency in one trade; that such a school absolutely abandons all college preparatory work; that there is almost no instruction in pure mathematics or pure science; that such schools will take on varying forms in different localities. The right sort of industrial work must depend upon the local environment, for two reasons: (1) It is the best education because it gives definite opportunity of studying some typical industries at close range; (2) it is better to prepare our youth for obtaining a position after graduation in his home community so that he may be under parental guidance for a few years after leaving the trades school. The trades schools will not parallel with our existing high schools but they will make a more or less direct connection with the intermediate industrial schools. The closer their connection is with such preliminary training, the more closely the trades school can have highly specialized courses, with their instruction concentrating for the development of skill and knowledge of direct practical bearing.

4 That no single course of study for either the intermediate industrial school or the trades school can be outlined. No method of procedure is as important as this. Just because a city has large textile interests is no reason why it should have a school identical with a textile school in another city. For example, a study of the needs of a textile industry and its workers reveals the fact that one city makes a specialty of knit goods, another of woolen

goods, another of cotton goods, and that the course of study in these cities must vary.

5 Local advisory boards should be appointed to assist the administration of these schools. Such boards will serve a double purpose: (1) Establishing in a community a confidence in the technical work done in the school; (2) reinforcing the school board in its appeal for financial support before city governments.

6 The question of the relationship of industrial education to trade unions is important. The state can develop a plan of procedure which will meet with the cooperation of employer and employee — of capitalist and of organized labor. These people will not deny the utmost opportunity to their own children if they have confidence that what is being done is free from selfish exploitation and rests upon a truthful educational footing and is guided by the common advantage of all the interests concerned.

7 There must be new textbooks relating to industrial subjects. I believe it would be a mistake for the state to undertake their preparation and publication. Textbooks are badly needed but beyond outlines and syllabuses, the state should be exceedingly cautious and reluctant to make a departure so radical as the publication of state textbooks.

8 The question of the disposition of the product of trades schools will be raised. Here again the procedure will depend upon the industry represented and the sentiments of the community. We must keep in mind that we are making efficient workmen and not making products. If a finished product has to follow because of our ideal of a finished boy, then it may be a wise and necessary procedure to make such products, but common sense and public opinion will govern the local situation.

9 The obtaining of suitable teachers for these schools opens up a large question. Our normal schools have been organized on the basis that they were primarily intended for the training of teachers for the elementary schools. Some have special departments in which special training is given so as to qualify its graduates to teach school gardening, drawing, cooking and shopwork. The technical and industrial requirements of our industrial and trades schools are such that teachers must be very practical in their methods. It will be impossible for an average normal school to fit its students for teaching positions in the industrial and trades schools unless the students have had shop experience before entering the school or obtain such experience after graduation.



In conclusion, I believe that the industrial and agricultural schools should be of every kind for which there is a demand on the part of the people. The system must necessarily be exceedingly flexible. The schools should be taught by workmen who can teach, rather than by teachers who have theories about work. The instruction should be "shoppish" rather than "bookish," although of course bookwork is always desirable. We are in the midst of a great task; we are working out the basis and the details of the greatest industrial democracy in human history. In the discussion of industrial education let us lose nothing of our good humor. Let us think straight, with an open mind and come to common conclusions.

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